

Tick. In describing the type *M. Oustalet* compares it with *A. torqueola*, but it evidently belongs to quite a different section of the genus, having the feathers of the sides and flanks ornamented with a large subterminal white spot and terminal black band, as in *A. brunneipectus*. From the latter species it appears to differ only in having the forehead chestnut instead of whitish buff and in lacking the pale buff superciliary stripes. In the description the wings are said to resemble those of *A. torqueola*, but the figure (*op. cit.*) represents the wing-coverts as being pale blue tipped with chestnut and with a subterminal black spot. If the figure correctly represents the colouring of this bird's wing, it is unlike that of any other member of the genus.

Hab. Tonkin and Anam.

XVII.—On *Myiopatris semifusca*, a small Neotropical Tyrant-bird, harmful to Tree-culture as a Disseminator of the parasitic *Loranthaceæ*. By Prof. Dr. EMIL A. GOELDI, H.M.B.O.U., C.M.Z.S., Director of the Pará Museum.

OUR acquaintance with the Neotropical Avifauna does not up to the present go far beyond catalogues and descriptions of bird-skins, and, as to its most important features, still remains unquestionably in the "cabinet phase." It is well to remember that the systematic naming and diagnosis of a species is merely the threshold at the entrance to the essential knowledge of its life-sphere—a small fraction only of the sum total of the natural history of the species. The truth of this assertion especially impresses him who calls to mind the family of the Tyrants, which plays so prominent a rôle in the physiognomy of the South-American Avifauna—a family to the complexity and richness of which I have already more than once alluded in previous publications. These facts have been, moreover, frequently pointed out by nearly all special investigators of South-American ornithology. What light has been thrown upon the life-history of this host of Tyrants (large, middle-sized, and small—

all the specimens adorned with fine-sounding scientific titles) either in ornithological literature or on the shelves of museums? The most elementary honesty would compel us to make the confession: "Little or nothing."

Text-fig. 12.



Myiopatis semifusca.—The parent birds are feeding their half-fledged nestlings with the berries of *Loranthus*. Note the seeds sticking everywhere in abundance to the twigs around the nest. One of the birds is in the act of ejecting a seed and wiping it on the branch. (About half the natural size.)

Under these circumstances even the slightest contribution to the life-history of the Tyrant-birds, when based on actual and accurate observation, becomes of special value. I am now able to give an account of the feeding-habits of *Myiopatis*

*semifusca**—a small Tyrant very common and characteristic of the ordinary avifauna of the gardens and orchards of the city of Pará. Its notes, phonetically represented by “tiü-

Text-fig. 13.



Nest of *Myiopatis semifusca*, built in the fork of a low pear-tree, and composed of wool, down-feathers, dry twigs, and leaves. (Side view, about half the natural size.)

tiü-tiü,” rapidly repeated three times, with a most surprising energy and loudness, are a harbinger of the dawn

* *Myiopatis semifusca* (ScL.); Cat. B. B. M. xiv. p. 123.

(mingled, of course, with the voices of other birds, such as *Troglodytes furvus* and *Myiarchus ferox*), and come from the high tree-tops and bushes. The same notes are frequently heard all through the day until nightfall. *Myiopatis semifusca* is a bird of restless, mercurial temperament and impetuous in all its movements.

The common statement in ornithological literature as to the food of the family of Tyrants is that it consists principally of insects and other animal substances. Certainly the scientific name chosen for the family is not against this prevailing idea. The usual opinion concerning the character and disposition of its members corresponds closely with that known of the nature of the Old-World family of Laniidæ, or Shrikes. So far as my knowledge of the literature of Neotropical ornithology goes, there is no evidence against such an opinion. For this reason what I have now to relate will be of so much the more interest.

In the beginning of December, 1903, I was informed by my cousin, Andreas Goeldi, that in the fork of a small pear-tree in the experimental department of the Botanical Garden there was a nest of this little Tyrant containing two half-fledged nestlings (see text-figs. 12 & 13, pp. 170, 171). At the same time he stated that his previous observations, made in the Serra dos Orgãos Mountains, in Southern Brazil, on an allied species of small Tyrant, were now being confirmed as to the food of the young, which consisted of the berries of parasitical Loranthaceæ. We proceeded together to the spot to verify the facts, and we soon found abundant evidence of the correctness of this statement in the innumerable berries of *Loranthus* glued on all the neighbouring branches and twigs within a radius of some metres.

Close observation confirmed the fact that the parent birds in their incessant visits to their young were the bearers and planters of the berries. They bring in their beaks and crops the small, whitish, round berries of the "herva de passariho"* from the neighbouring fruit-trees, where

* According to kind information furnished by Dr. T. Huber, chief of the Botanical Department of our Museum, the most common species of

this parasite grows in abundance. As the nutritious part of the fruit is the mucilaginous pulp, while the seeds are only a dead weight, the birds seek to rid themselves of the latter by wiping the sticky kernels off their beaks on the nearest twigs and branches, which after a time become thickly studded with these objects. The pulp, physiologically manipulated and previously prepared in the parental crop, constitutes the food furnished by the parents to the nestlings.

This result was further corroborated by the following experimental observation:—When the two nestlings were almost full-fledged they were taken from the nest (which, by the way, was placed so near the ground and in such an exposed situation that it was liable to be destroyed at any moment) and put into a cage, which was hung in the shade on a branch of a neighbouring tree. The roomy cage was made of narrow splints of the leaf-stems of the Mirity-palm, the usual material for a bird-cage locally, and contained nothing but a perch. After a very short interval the parent birds found and recognised their little ones, as we had hoped, and continued to feed them as before, through the narrow openings of the cage. It was not many days before both the splints on the floor of the cage and still more the perch were thickly bespread with the sticky seeds of the “*herva de passarinho*,” which in some places formed hanging clusters in all stages of incipient germination. In the same way as in the germination of the Old-World mistletoe, the first phase in the Loranthaceæ is the sending out of a pedicle from the basal point of the kernel with an adhesive terminal disc, representing morphologically the first root, destined to penetrate the tissues of the branch

Loranthaceæ (interesting on account of the trouble and damage they cause to arboriculture near Pará) are *Phthirusa pyrifolia* Eichler (principally infesting species of the genus *Citrus*, such as lemon-, lime-, and orange-trees), *Phthirusa theobromæ* Eichler (persecuting more especially the mango-tree, *Mangifera indica*), and *Oryctanthus ruficaulis* Eichler (found preferably on the Sapotille-tree, *Achras sapota*). These kinds of “*herva de passarinho*” much resemble each other, but on close observation differences may be noted.

of the host-tree. The second phase consists of the shedding of the seed-shell and the opening of the two cotyledons. The accompanying photograph of a part of the perch (text-fig. 14) will indicate these phenomena better than any verbal description.

Text-fig. 14.



A portion of the perch from the cage in which the young birds, nearly fully fledged, were confined for close observation of the food furnished by the parents. Notice the numerous seeds adhering to and hanging from the perch, wiped off the beaks of the young birds, some of which are already in the incipient stages of germination. (Natural size.)

From this it will be clearly seen that our small species of Tyrant is a vegetarian to a high degree, at least during the nesting-period, and that the principal part of its subsistence at this season consists of the ripe berries of the parasitical Loranthaceæ. I must not fail to notice the fact that previous personal observations in various parts of Brazil have demonstrated the fondness of some other small birds for the same berries; for example, in the Organ Mountains every year we could see flocks of the magnificently coloured *Procnias tersa* busy in the berry-harvest among the tufts of this Neotropical mistletoe. This, however, will cause no surprise, when we recollect that *Procnias* belongs to the family of the Cotingidæ, in which berries form a normal part of the natural food. This is also the case, as my personal observation enables

me to affirm, with *Coracina scutata*, *Chasmorhynchus nudicollis*, *Tijuca nigra*, *Phœnicocercus carnifex*, *Xipholena lamellipennis*, *Iodopleura isabellæ*, and *Tityra cayana*.

Of not less interest, however, is the fact that certain other small species of the Tyrant-family play exactly the same rôle in Southern Brazil as *Myiopatris semifusca* does here in Pará. I have before me an unedited article written in Portuguese by my cousin Andreas Goeldi in November 1900, in which he treats in detail of the propagation of "herva de passarinho" by means of very small birds, popularly called "Caga-sébos"*. The following is a translation from the article in question:—"All farmers and other owners of fruit-trees are well acquainted with the accursed tree-parasite called 'herva de passarinho.' The destruction of this parasite requires unremitting vigilance everywhere. However, not everybody knows just how certain birds plant and scatter the seeds.

"I had always supposed that the birds ate the fruit of the parasite and scattered the undigested seeds about in their excrements on the branches on which they perched. But some interesting observations which I had recently occasion to make have changed my opinion. Early one morning my attention was attracted to a small flock of five or six little birds hopping about our orchard upon some small fruit-trees. I noticed that on the different branches which I had recently cut, and on which I knew there were no seeds or young plants of the 'herva de passarinho' before, the quantity of seeds glued was constantly increasing day by day. The branches were already well covered with them, some still fresh and recently deposited and others in all stages of germination. On carefully watching the branches and the small birds perched on them, I noticed certain peculiar movements which further attracted my attention. I saw that one of them vomited up something that looked like a seed of 'herva de passarinho.' Continuing my observations, I made the following discoveries:—The bird in question was *Serpophaga subcristata*,

* This is the popular term there used for *Certhiola chloropyga*, and also for *Phyllomyias burmeisteri* and *Serpophaga subcristata*.

one of the family of Tyrants, commonly called 'Caga-sébo.' The birds hopped from branch to branch, and sometimes to the ground, and it seemed to me that, as is usual with other Tyrants, they were catching insects, which were abundant in that place. Perched again on one of the branches, they made a peculiar movement, as if something in their alimentary canal was giving them trouble. In a short time there was expelled from their beak a seed of the 'herva de passarinho.' The seed, owing to the viscous matter with which it is covered, was very difficult to remove from their beaks, so that the birds were obliged to wipe them repeatedly on both sides of the branch, to which the ejected seed immediately became glued fast. It was sometimes troublesome for the bird to get rid of the seed, because the viscous matter formed strings so long and so sticky that it was obliged to raise its head as high as possible. At other times it seemed to me that in order to gain its end it became necessary to fly away to another perch to break the troublesome string of seeds. Very few of the seeds, I observed, fell to the ground, nearly all remaining stuck fast to the branches.

"The observation proved to me that the 'herva de passarinho' is not disseminated by means of excrement, but rather in consequence of the seeds being indigestible, at least for these particular birds. For this latter reason, as well as on account of the great volume of the seeds in comparison with the size of the intestines, the birds vomit them up and glue them to the twigs, branches, and wires, in short to anything convenient for the purpose.

"Near the place where I made these observations there were several well-grown clusters of bamboos, full of 'herva de passarinho,' with abundance of ripe berries. Every day these 'Caga-sébos' were to be seen banqueting there. Moreover, in this operation of vomiting and planting the seeds of the parasite, I was always able to observe them early in the morning. During the rest of the day this is somewhat more difficult, as the birds probably retire to shady thickets and there busy themselves in eating the berries and in ejecting

and planting the indigestible seeds. Consequently the only part of the fruit utilized is the pulp. I have shot several of these small birds and examined the contents of their crops, and have found nothing else but the pulp and seeds of the berries of the 'herva de passarinho.' It might be supposed that as soon as the fruit is taken in the beak they separate the pulp from the seed and expel the latter. Such, however, is not the case: in all the specimens which I examined I found the crop full of seeds and none in the beak.

"It seems strange to me that this small Tyrant should be one of the most assiduous planters of the 'herva de passarinho.' I should have expected, from the form of its beak, to find that it was insectivorous rather than frugivorous.

"I have never yet seen any other birds get rid of the seeds of 'herva de passarinho' in this manner. It is probable that larger birds, such as Thrushes, Pigeons, &c., digest the seeds, or at least do not reject them from the crop. It is therefore not likely that they are planters of the berries in this way. For this reason we may consider the 'Caga-sébo,' and perhaps others of the same tribe and size, if not the only at least the most active propagators of the 'herva de passarinho.'

"To rid themselves of the seeds, the 'Caga-sébos' make no selection of places. Wherever they may be perched and feel the need of ejecting the seeds, there they wipe their beaks and the seed sticks fast. Even our electric-lighting wires, at the time when these berries are ripe, are constantly covered with fresh and sprouting seeds. In the same way also the wires which serve as a support to the branches of the grapevines, as well as the branches themselves, and the branches and the twigs of the trees and bushes, are covered every year with these seeds. Wherever favorable conditions are found, which seems to be on living branches and twigs of plants and trees, these seeds germinate and develop normally if they are not immediately destroyed, while on the wires and dry sticks they soon die on account of the lack of the proper substratum in which to take root.

"The manner in which the *Loranthi* are disseminated is

an interesting topic. Just as the seeds of certain plants are furnished with wings, down, hooks, and other similar contrivances as means of dissemination, so this parasite enjoys the same advantage in its viscous involucre when scattered by the small bird in question. On examining the position of the freshly deposited seeds on the twigs it is always to be noticed that, without exception, the germinal end of the seed, that is, where the primitive root is to appear, is placed next to the bark. I have not yet ascertained whether this position of the seeds is due merely to gravitation, which makes the heavier end turn downwards, or whether it is because the viscous pulp exists only on the germinal end.

“Should we consider the ‘Caga-sébo’ as a useful or as a harmful bird? This question is not yet fully settled. From the facts given above alone we should come to the conclusion that we should classify it as a harmful bird, as the damage and annoyance caused by the parasite are well known to everybody.

“At the present time of writing (end of October and beginning of November 1900), the ‘herva de passarinho’ is in blossom, and not a single specimen with fruit is to be met with. The above-mentioned observations were made by me in July and August. The temporary disappearance of the ‘Caga-sébo’ from its accustomed haunts coincides exactly with the end of the supply of the berries of the *Loranthi*. Supposing that, in default of berries, they might feed on insects, I searched for several days for some specimens in order to examine the contents of their stomachs to throw light on the problem. I was much surprised not to find a single specimen after four days’ search in localities where in the ‘berry-time’ I was sure to meet with them in flocks. Where had they gone to? Perhaps not being inclined to feed exclusively on insects they had left the bamboos and other groups of trees and bushes infested with the ‘herva de passarinho’ in order to look for other fruit-bearing plants in the forest during the interval before the ripening of their favourite food. Up to the present time I suspend my

judgment as to whether the 'Caga-sébo' is predominantly harmful. It is still possible that it is periodically busy in the destruction of noxious insects. Further examination and observation in this direction, therefore, are desirable, and I hope soon to be able to furnish some supplementary data on this subject."

XVIII.—*Notes on a small Collection of Birds from Algeria.*

By HARRY F. WITHERBY.

So much has been published both in Germany and in this country on the birds of Morocco, Algeria, and Tunis that I shall make my remarks in this paper as brief as possible, and shall include in the list which follows only those species of which specimens were actually obtained. The collection was made by my wife and myself in Algeria in March, April, and May 1904.

We stayed from March 7th to 16th at Biskra, the well-known oasis. Its predominant feature is the date-palm, but here and there are gardens with acacias, mimosas, and other trees and shrubs, while there is some land with corn. A very short time suffices to get out of the oasis, however, either into the flat desert or into rocky and barren hills.

On March 16th we journeyed north and collected until April 7th at Hammam Meskoutine, in the hills near Constantine. A good deal of the land there is cultivated, but most of the surrounding hills are covered with wild olive-trees or thickly overgrown with various shrubs, while here and there are dense thickets and wild and thickly wooded glens.

From April 14th to May 6th we were at Hammam R'Hira, a few miles west of Algiers, where the chief attraction is a large pine-forest, which, unlike most pine-woods, is so thick with undergrowth as to be in some parts almost impenetrable.

From May 8th–23rd we collected near Les Glacières, a small hotel in the Little Atlas Mountains not far from